

IMCB Invited Speaker



Speaker : Prof. Dieter Jendrossek
Professor for Microbiology and Biochemistry
University of Stuttgart, Germany

Date : 22 October 2012 (Monday)

Time : 11:00AM - 12:00PM

Venue : Level 3, IMCB Seminar Room 3-46, Proteos, Biopolis

Host : Prof. Lianhui Zhang

Seminar :

How bacteria take care of their kids: Evidence for controlled and fair distribution of PHB granules to daughter cells in *Ralstonia eutropha* H16

Ralstonia eutropha H16 has become the model organism for studying metabolism of poly(3-hydroxybutyrate) (PHB), an important biodegradable biopolymer that is sustainably produced worldwide in the scale of 10^5 t/a from renewable resources such as sugars. *R. eutropha* cells usually accumulate about a dozen PHB granules during growth at high C/N-ratios. While biochemistry and molecular biology of PHB accumulation and PHB biodegradation have been investigated in great detail during the last two decades only little is known whether and how subcellular localization of PHB granules is controlled by the bacteria. We addressed this question by performing a two-hybrid approach to screen for proteins with the ability to interact with proteins of the PHB granule surface. Two novel Pha proteins were identified which control subcellular localization of PHB granules and ensure almost equal distribution of PHB granules to daughter cells after cell division as revealed by fluorescence microscopy and transmission electron microscopy. A revised model for PHB granule formation will be proposed.

About the Speaker :

Dieter Jendrossek got his diploma in Microbiology at the Georg-August-University Goettingen, Germany, in 1985 and finished his PhD thesis in Hans G. Schlegel's lab at Goettingen (1988). He performed a post-doc at Alexander Steinbuechel's lab (Germany) on fermentation enzymes in strict aerobic bacteria (*Ralstonia eutropha*) before he started to build up his own group in 1990. D. Jendrossek elucidated the biochemistry and molecular biology of extracellular polyhydroxybutyrate (PHB) depolymerases of bacteria. In 1995 he got the position of an associate professor and included catabolism of natural rubber (polyisoprene) and metabolism of acyclic terpenoid compounds in *Pseudomonas aeruginosa* to his research interests. His group identified the so-called acyclic terpene utilization (Atu) pathway in *P. aeruginosa* and *P. citronellolis*. In 1999 D. Jendrossek moved to University Stuttgart, Germany, where he got a position of a professor for Microbiology and Biochemistry. He broadened his research interest to prokaryotic cell biology and investigates formation and subcellular localization of bacterial organelles such as PHB granules (carbonosomes). In 2010 research on the use of squalene hopene cyclases (SHCs) for cofactor-independent terpene cyclization in the biotechnical production of L-menthol